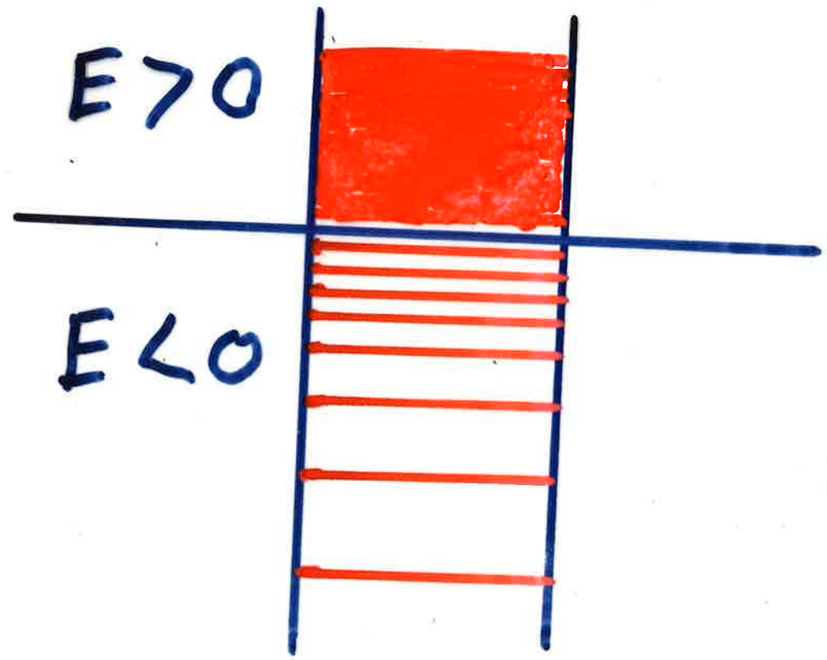
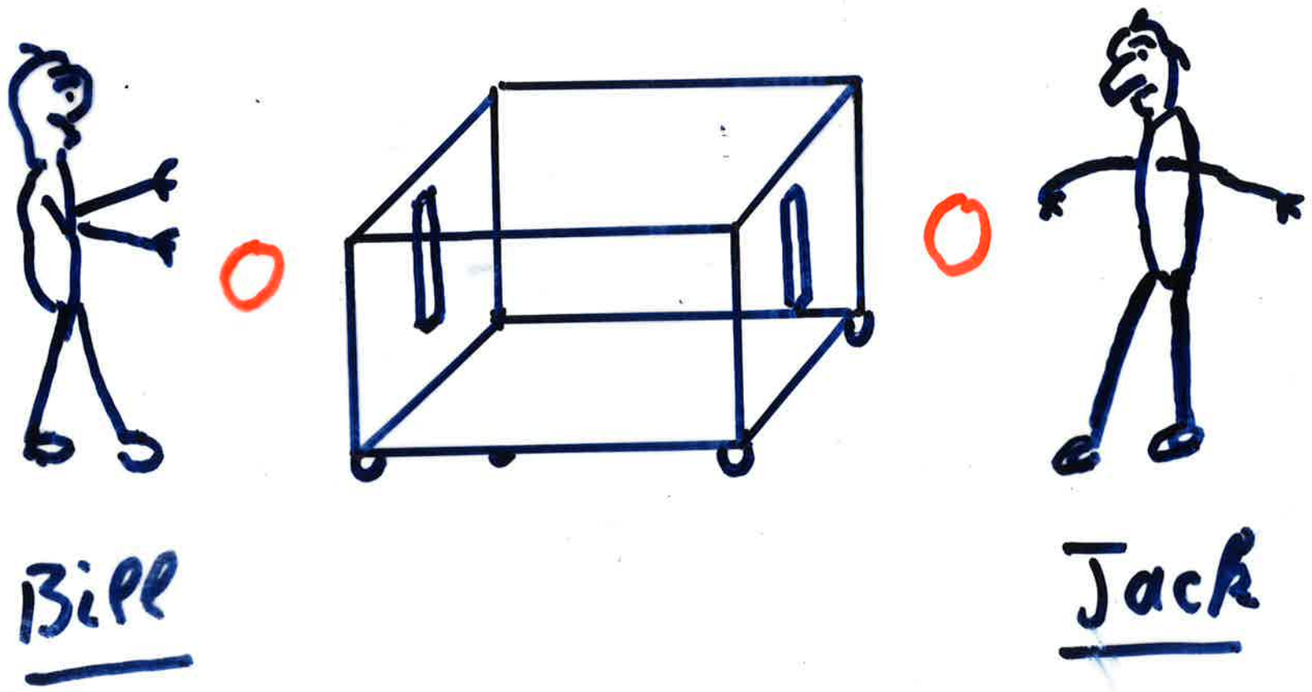
# ENERGY LEVELS IN THE HYDROGEN ATOM



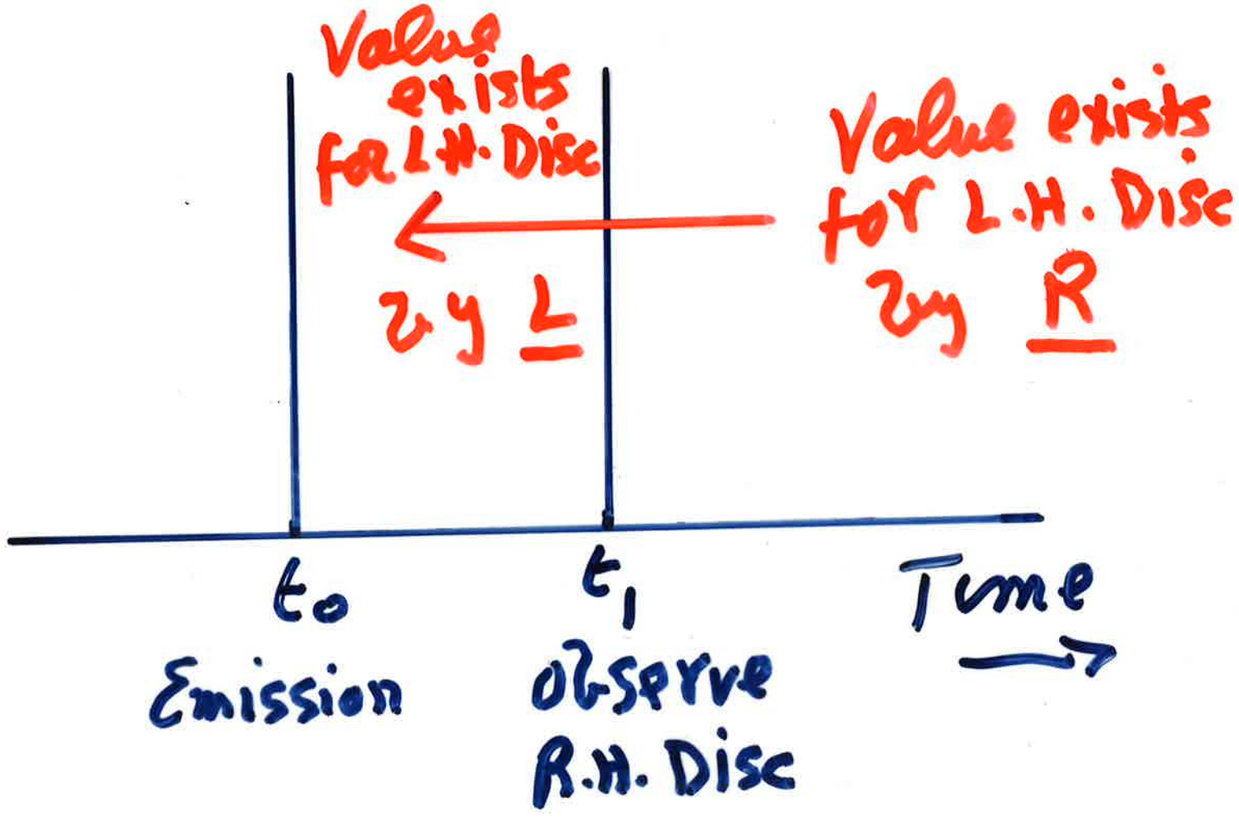
# THE EINSTEIN ARGUMENT



Bill

Jack

(2a.)


Value exists for L.H. Disc
by L
Value exists for L.H. Disc
by R
$t_0$
Emission
$t_1$
Observe R.H. Disc
Time

# THE BELL ARGUMENT

NO-ACTION-AT-A-DISTANCE

$\Rightarrow$ POSSESSED VALUES
(Einstein)

$\Rightarrow$ ACTION-AT-A-DISTANCE
(Bell)

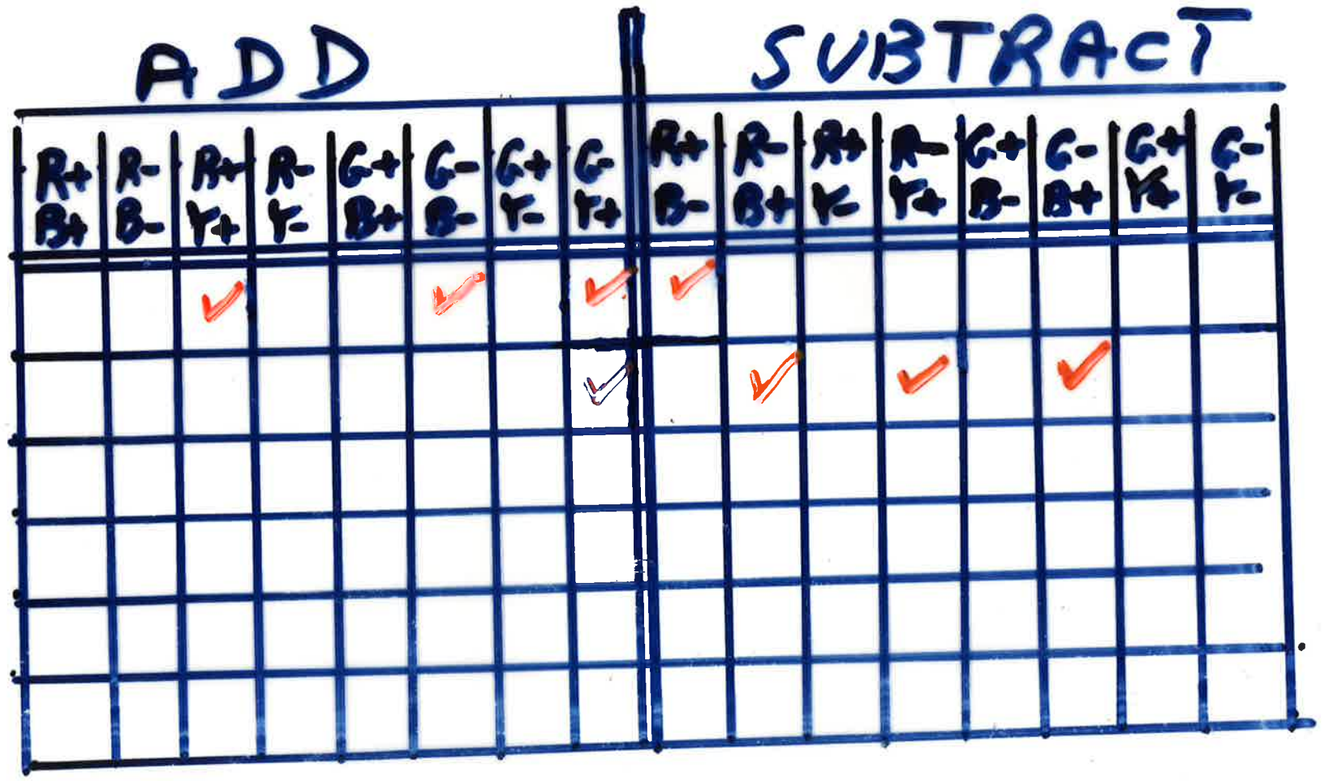
# PROOF OF THE BELL INEQUALITY

$$N(R+,B+) + N(R-,B-) + N(R+,B-) + N(R-,B+)$$
$$+ N(R+,Y+) + N(R-,Y-) + N(R+,Y-) + N(R-,Y+)$$
$$+ N(G+,B+) + N(G-,B-) + N(G+,B-) + N(G-,B+)$$
$$+ N(G+,Y+) + N(G-,Y-) + N(G+,Y-) + N(G-,Y+)$$
$$= 4N$$

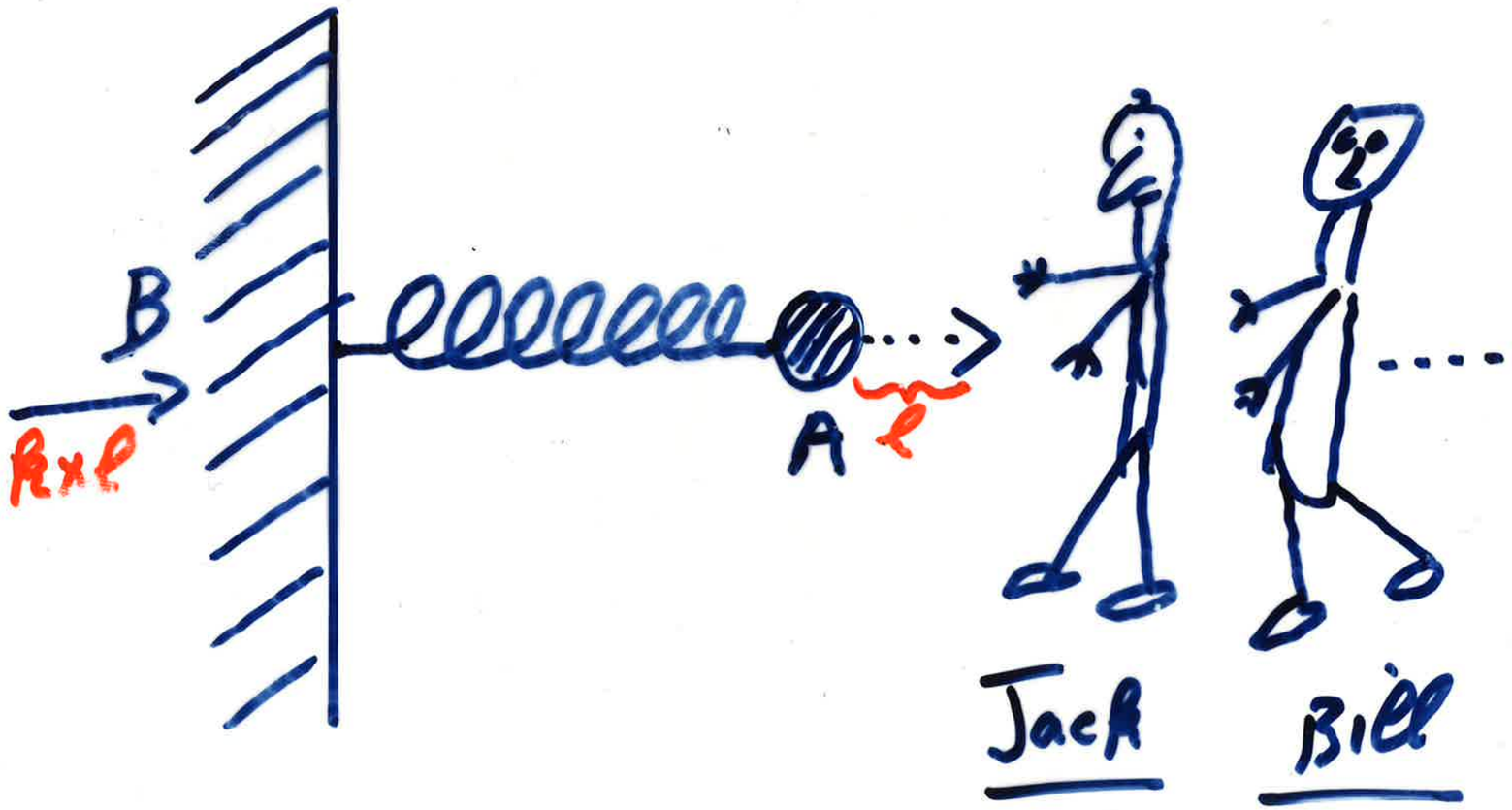
But

$$|N(R+,B+) + N(R-,B-) + N(R+,Y+) + N(R-,Y-)$$
$$+ N(G+,B+) + N(G-,B-) + N(G+,Y-) + N(G-,Y+)$$
$$- N(R+,B-) - N(R-,B+) - N(R+,Y-) - N(R-,Y+)$$
$$- N(G+,B-) - N(G-,B+) - N(G+,Y+) - N(G-,Y-)|$$
$$\leq 2N$$

# THE BELL EXPERIMENT



# THE BELL INEQUALITY

$$\Big| P_{\psi_{02}}(R+, B+) + P_{\psi_{02}}(R-, B-) + P_{\psi_{02}}(R+, K-)$$
$$+ P_{\psi_{02}}(R-, K-) + P_{\psi_{02}}(G+, B+) + P_{\psi_{02}}(G-, B-)$$
$$+ P_{\psi_{02}}(G+, K-) + P_{\psi_{02}}(G-, K+)$$
$$- P_{\psi_{02}}(R+, B-) - P_{\psi_{02}}(R-, B+) - P_{\psi_{02}}(R+, K+)$$
$$- P_{\psi_{02}}(R-, K+) - P_{\psi_{02}}(G+, B-) - P_{\psi_{02}}(G-, B+)$$
$$- P_{\psi_{02}}(G+, K+) - P_{\psi_{02}}(G-, K-) \Big|$$
$$\leq 2$$

# ROBUSTNESS